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Five new *Napaeus* species (Gastropoda: Pulmonata: Enidae) from Gran Canaria and El Hierro (Canary Islands)

YURENA YANES[1], JESÚS SANTANA[2], MIGUEL ARTILES[2], FRANCISCO DENIZ[3], JAVIER MARTÍN[4], MARÍA R. ALONSO[5] & MIGUEL IBÁÑEZ[5,6]

[1]*Instituto Andaluz de Ciencias de la Tierra (CSIC-Universidad de Granada), Camino del Jueves s/n, 18100, Armilla, Granada, Spain. E-mail: yurenayanes@ugr.es*
[2]*Las Palmas de Gran Canaria, Gran Canaria, Canary Islands, Spain. E-mail: CASIOPEA_69@terra.es; franciscodeniz@yahoo.es*
[3]*Arinaga, Gran Canaria, Canary Islands, Spain. E-mail: miguel_artiles@yahoo.es*
[4]*El Coromoto, La Laguna, Tenerife, Canary Islands, Spain. E-mail: javimarba@hotmail.com*
[5]*Departamento de Biologia Animal, Universidad de La Laguna, E-38206 La Laguna, Tenerife, Islas Canarias, Spain. E-mail: malonso@ull.es*
[6]*Corresponding author. E-mail: mibanez@ull.es*

Abstract

Five new species of *Napaeus* are described, four from Gran Canaria and one from El Hierro (Canary Islands): *Napaeus josei* **n. sp.**, *N. veneguerensis* **n. sp.**, *N. arinagaensis* **n. sp.**, *N. validoi* **n. sp.** and *N. grohi* **n. sp.** The main differences from the most similar species and data on distribution are presented. At least three of the new species disguise their shells with soil, presumably to avoid predation.

Key words: taxonomy, insular endemics, genital anatomy, shells, shell disguise

Introduction

The genus *Napaeus* has undergone a remarkable radiation in the Canary Islands (mid-Atlantic), with 65 living species (Yanes *et al*. 2009, 2011; Holyoak *et al*. in press; this paper) and two extinct species (Castillo *et al*. 2006; this paper) described, and we have collected specimens of some other as yet undescribed species.

The distribution of each species of *Napaeus* is typically restricted to a small area within a single island (i.e. they demonstrate "single island endemism"); some areas are well preserved but many other are not. The level of legal protection of species and their habitats is now lower than before, after a new Canarian law of 2010 abolished protection or reduced the level of protection of almost all the species included in the previous legislation.

The small island of La Gomera has the highest number (23) of living *Napaeus* species known for any single island whereas the two central islands, Tenerife and Gran Canaria, have only 16 and 13, respectively. The lowest numbers of living *Napaeus* species were described from El Hierro, the westernmost island, with 5 species (Grasset 1857; Mousson 1872; Wollaston 1878), La Palma, with 5 species (Shuttleworth 1852; Mousson 1872; Wollaston 1878; Henríquez *et al*. 1993a), and the two easternmost islands, Lanzarote, with 2 species (Wollaston 1878; Alonso *et al*. 1991) and Fuerteventura, with 1 species (Ibáñez *et al*. 2007). A complete list of the *Napaeus* species described to that date is found in Yanes *et al*. (2009); four additional species have been described by Yanes *et al*. (2011).

In the present study five new *Napaeus* species are described, four from Gran Canaria and one from El Hierro. They are not allocated to subgenera (*Napaeus* and *Napaeinus*) as described by Hesse (1933) because this has been shown to be problematical based on genital anatomy alone: anatomical study of six species revealed contradictions with Hesse's subgeneric descriptions (Alonso *et al*. 1995; Yanes *et al*. 2009). Different modes of classification (i.e. genital anatomy and molecular phylogeny) also yield different results (Alonso, Goodacre *et al*. 2006). Thus, the new species are not assigned to Hesse's subgenera until a phylogenetic analysis of the genus *Napaeus* is conducted.

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